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Title : Seasonal Variation in Fatty Acid Composition of the Blubber of Bottlenose Dolphins (*Tursiops truncatus*) and Selected Dolphin Prey Species

Category : Ecology

Student : M.A./M.S.

Preferred Format : Either Oral or Poster Presentation

Abstract : Fatty acid (FA) profiles of animals, especially carnivores, often reflect those of their prey. Bottlenose dolphins feed year-round. However, prey assemblages available to dolphins vary seasonally; therefore the FA composition of dolphin blubber should also be expected to change. Seasonal variation in cetacean blubber has received little attention despite the recent increase in the use of FA analysis to infer dietary information. To investigate this variation, full-depth blubber samples ($n = 71$) were collected via remote dart biopsy over a period of one year (Mar. 2002-Feb. 2003) from free ranging, identifiable dolphins in inshore and coastal waters near Charleston, SC. Additionally, samples of nine selected prey species ($n = 340$) were collected through collaboration with the South Carolina Department of Natural Resources. Blubber samples were divided into three depths and FA compositions were determined for the inner and outer blubber regions, as well as for prey samples. Data were analyzed using a combination of multivariate statistical techniques. Fatty acid composition and total lipid were found to vary among seasons, with mean total inner blubber lipid being significantly lower in dolphins sampled during summer and fall as compared to winter and spring. Differences in FA profiles were also noted between inner and outer blubber layers, with higher levels of long-chain polyunsaturated FA found in the inner region. Variation in FA profiles was also seen among samples from differing geographic locations. Fatty acid compositions differed among prey species, and seasonal differences within individual prey species were also found. Dolphin and prey FA profiles were compared to explore possible predator-prey relationships. A better understanding of these seasonal changes in dolphin feeding will aid in the identification of critical habitats for the local dolphin population and help fish researchers provide sound management of important prey species.